Open chromatin in pluripotency and reprogramming.

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Public Summary:

Scientific Abstract:
Pluripotent stem cells can be derived from embryos or induced from adult cells by reprogramming. They are unique among stem cells in that they can give rise to all cell types of the body. Recent findings indicate that a particularly 'open' chromatin state contributes to maintenance of pluripotency. Two principles are emerging: specific factors maintain a globally open chromatin state that is accessible for transcriptional activation; and other chromatin regulators contribute locally to the silencing of lineage-specific genes until differentiation is triggered. These same principles may apply during reacquisition of an open chromatin state upon reprogramming to pluripotency, and during de-differentiation in cancer.